



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/783,217	02/15/2001	Fumikazu Shimoshikiyo	4034-23	2792

23117 7590 -08/19/2003

NIXON & VANDERHYE, PC  
1100 N GLEBE ROAD  
8TH FLOOR  
ARLINGTON, VA 22201-4714

EXAMINER

PARKER, KENNETH

ART UNIT PAPER NUMBER

2871

DATE MAILED: 08/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/783,217

Applicant(s)

Examiner

Kenneth A Parker

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 10 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-31 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by**

**Koma et al 5608556.**

Claims 1 is written to a liquid crystal display device, comprising a first substrate, a second substrate and a liquid crystal layer interposed between the first substrate and the second substrate, wherein: a plurality of picture element regions are provided each of which is defined by a first electrode provided on one side of the first substrate which is closer to the liquid crystal layer and a second electrode provided on the second substrate so as to oppose the first electrode via the liquid crystal layer; the liquid crystal layer is a vertical alignment type liquid crystal layer containing a liquid crystal material having a negative dielectric anisotropy; and each of the plurality of picture element regions includes at least one orientation-regulating region, the orientation-regulating region including a first region in which an electric field applied across the liquid crystal layer by the first electrode and the second electrode has a first electric field strength, a second region in which the electric field has a second electric field strength which is smaller than the first electric field strength, and a third region in which the electric field has a third electric field strength which is smaller than the second electric field strength, wherein the first, second and third regions are arranged in this order in a predetermined direction. Claims 9 is written to a liquid crystal display device, comprising a first substrate, a second substrate and a liquid crystal layer interposed between the first substrate and the second substrate, wherein: a plurality of picture element regions are provided each of which is defined by a first electrode provided on one side of the first substrate which is closer to the liquid crystal layer and a second electrode provided on the second substrate

Art Unit: 2871

so as to oppose the first electrode via the liquid crystal layer; the liquid crystal layer is a vertical alignment type liquid crystal layer containing a liquid crystal material having a negative dielectric anisotropy; and each of the plurality of picture element regions includes at least one orientation-regulating region, the orientation-regulating region including a first region in which the first electrode and the second electrode have a first inter-electrode distance therebetween, a second region in which the first electrode and the second electrode have a second inter-electrode distance therebetween which is greater than the first inter-electrode distance, and a third region in which the first electrode and the second electrode have a third inter-electrode distance therebetween which is greater than the second inter-electrode distance, wherein the first, second and third regions are arranged in this order in a predetermined direction.

Claim 17 is written to a liquid crystal display device, comprising a first substrate, a second substrate and a liquid crystal layer interposed between the first substrate and the second substrate, wherein: a plurality of picture element regions are provided each of which is defined by a first electrode provided on one side of the first substrate which is closer to the liquid crystal layer and a second electrode provided on the second substrate so as to oppose the first electrode via the liquid crystal layer; the liquid crystal layer is a vertical alignment type liquid crystal layer containing a liquid crystal material having a negative dielectric anisotropy; the first electrode includes a lower conductive layer, a dielectric layer covering the lower conductive layer, and an upper conductive layer provided on one side of the dielectric layer which is closer to the liquid crystal layer; the upper conductive layer includes an upper layer opening for each of the plurality of picture element regions, and the lower conductive layer includes a lower layer opening for each of the plurality of picture element regions; and each of the plurality of picture element regions includes at least one orientation-regulating region, the orientation-regulating region including a first region in which the liquid crystal layer is arranged between the upper conductive layer of the first electrode and the second electrode, a second region in which the liquid crystal layer and the dielectric layer located within the upper layer opening are arranged between the lower conductive layer of the first electrode and the second electrode, and a third region in which the liquid crystal layer and the dielectric layer located within the upper layer opening are arranged between the lower layer opening of the first electrode and the second electrode, wherein the first, second and third regions are arranged in this order in a predetermined direction.

The regions of Koma include a pixel window and extra electrodes with windows (see figure 5). These structures produce regions which can be found to have at least three regions across any line across the device (for example, going from left to right or right to left. They create multiple different voltage regions- in fact, a continuum of voltage regions and therefore

Art Unit: 2871

the middle “states” can be considered regions. Therefore, these claims are anticipated by the reference.

Regarding the dependent claims:

Claims 2, 19 and 10 have a boundary between the first region and the second region and a boundary between the second region and the third region extend in a direction perpendicular to the predetermined direction (inherently met)

Claims 3 and 11 have each of the plurality of picture element regions includes a plurality of orientation-regulating regions, the plurality of orientation-regulating regions having the same direction of arrangement of the first, second and third regions. (also inherently met)

Claims 4-8, 12-15 have each of the plurality of picture element regions includes a first orientation-regulating region in which the first, second and third regions are arranged in this order in a first direction, and a second orientation-regulating region in which the first, second and third regions are arranged in this order in a second direction which is different from the first direction, and different arrangements on how this is ordered. As coma has 4 areas at 90 degrees, all of the arrangements are met by the reference.

Claim 18 has each of the upper layer opening and the lower layer opening has a side extending in a direction perpendicular to the predetermined direction, and a boundary between the first region and the second region and a boundary between the second region and the third region extend in parallel to the side (met by the figures showing the X hole or any with a straight hole – at least the end surface of the X)

Regarding claims 20 and 21, one surface of the first substrate which is closer to the liquid crystal layer is substantially flat and the liquid crystal layer has a substantially constant thickness. - the figure shows flat substrates across all pixel regions, and a flat liquid crystal region.

Regarding claim 22 each of plurality of picture element regions includes a plurality of orientation-regulating regions, the plurality of orientation-regulating regions having the same direction of arrangement of the first, second and third regions. This would be met by multiple pixel areas, or by taking either side of the window to be a different area.

Regarding claims 23-26 plurality of picture element regions includes a first orientation-regulating region in which the first, second and third regions are arranged in this order in a first direction, and a second orientation-regulating region in which the first, second and third regions are arranged in this order in a second direction which is different from the

Art Unit: 2871

first direction, or wherein the first direction and the second direction are opposite to each other or where each of the plurality of picture element regions further including a third orientation-regulating region in which the first, second and third regions are arranged in this order in a third direction which is different from the first and second directions, and a fourth orientation-regulating region in which the first, second and third regions are arranged in this order in a fourth direction which is different from the first, second and third directions, wherein the third and fourth directions are perpendicular to the first and second directions. These are met by the X regions.

Regarding claim 27, the the first orientation-regulating region and the second orientation-regulating region share at least one of the first region and the third region can be met by construing the inner part of the window as shared.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koma et al 5608556.**

Regarding claim 28, each upper layer opening and the lower layer opening has a polygonal shape or a circular shape, with the lower layer opening being provided within the upper layer opening. It was well known at the time that a series of slits was functionally equivalent to the X shaped opening. Therefore, it would have been obvious to one of ordinary skill to substitute one for the other as the two had been established as well known functionally equivalent alternatives.

Regarding claim 29 the upper conductive layer and the lower conductive layer are electrically connected to each other as conventionally done (they are both at ground), and would have been obvious to one of ordinary skill for that reason.

Regarding claims 30 and 31, the liquid crystal display device of claim 17, wherein the first electrode is a picture element electrode which is provided for each of the plurality of picture element regions, and a voltage is applied to the first electrode via an active element which is provided for each of the plurality of picture element regions and where in the second electrode is a single counter electrode which is provided commonly for the plurality of picture element regions. These features are obvious as they were conventional at the time, and would have been obvious to one of ordinary skill for that reason.

#### ***Election/Restrictions***

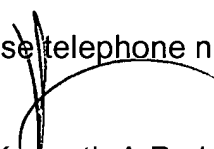
Applicant's election without traverse in Paper No. 7 is acknowledged.

Art Unit: 2871

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth A Parker whose telephone number is 703-305-6202. The examiner can normally be reached on 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0956.



Kenneth A Parker  
Primary Examiner  
Art Unit 2871

\*\*\*

August 7, 2003